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Reference #1: RFP 2493-25
Reference #2: Sally Bartnett

XOL 19.04.02 NV45 12.0A 04/2019

RFP 2493-25
Engineering and Design Services"

Due: June 25, 2019; 3:00PM



June 25, 2019

Mr. David Rockhill, C.P.M.
City of Branson
110 W. Maddux St., Suite 200
Branson, Missouri 65616

Re: Proposal Number 2493-25: Engineering and Design Services

Dear Mr. Rockhill,

Thank you for the opportunity to submit our proposal and qualifications for Engineering and Design Services for the Lift Station 17 Force Main, Spring Creek Neighborhood Water Distribution and Sanitary Sewer Collection projects.

Our team has a history of completing over 500 similar type projects for various cities in Missouri. Established 60 years ago, Cochran is a civil engineering, architecture, testing & inspection, geotechnical, environmental and land survey firm for municipal water and wastewater projects. We are confident in our combined knowledge and experience to excel at the proposed projects for the City of Branson.

With six offices (Ozark, St. Louis, Osage Beach, Wentzville, Farmington and Union) and over 85+ team members, our uniquely qualified team of engineers, surveyors, architects and interior designers are prepared to assist you with all of your project needs in-house. We have successfully performed the services needed for the three projects for a variety of Cities in Missouri.

We are a collaborative team and believe each project is an opportunity to build a partnership with our clients. We believe in listening first to understand your needs, and to keep top of mind future budgets, schedules and operating cost. **Our goal is to give you accurate information so together we can make educated design decisions.** We encourage you to review our projects and call our references, as they are our best referral.

Thank you for meeting with us last week, and look forward to the opportunity to partner with the City of Branson. After reviewing our qualifications, should you have any questions or need any further information, please feel free to contact me at 314.581.4796.

Sincerely,

Christopher N. Boone, P.E., President
chris@cochraneng.com

About Us

Established in 1959, **Cochran** is a civil engineering, construction testing, construction inspection, geotechnical, environmental, construction quality management, architecture and land survey firm specializing in complex and challenging water and wastewater projects.

For nearly 60 years, the Cochran team has assisted like communities with over 500+ similar lift station, water distribution and waste water type projects. It is this experience and commitment to excellence that we understand each project and community will have its unique set of needs and constraints. Therefore, we evaluate existing conditions, recommend practical solutions, and anticipate design/construction conflicts, cost concerns, and present alternatives based on sound engineering judgment.

Principal Involvement

Our commitment to you includes principle involvement in all phases of a project. Each principle takes personal as well as professional responsibility on the success of all projects, and will assure each receives the individual attention it deserves. In addition, they will guide the project team in focusing on our customer service philosophy and core values which include quality, best creative design, collaboration and communication with everyone on the team.

Cochran's Five Principles:

Chris Boone P.E.
Dave Christensen P.E.
Shannon Johanning P.E.
Kurt Daniels P.E.
Richard Tuttle P.E.

Location of Offices

Our 6 office locations in Ozark, Union, St. Louis, Wentzville, Farmington, and Osage Beach allow Cochran to respond to you in a timely and efficient manner.

Size of Firm

Cochran is a licensed State of Missouri business with a team of 85+ and 35 professionally licensed individuals:

- 25 professionally licensed Engineers**
- 8 professionally licensed Surveyors**
- 2 professionally licensed Architects**

60
YEARS IN BUSINESS

85+
COCHRAN
PROFESSIONALS

6
OFFICE LOCATIONS

45+
MUNICIPALITIES BEING
SERVED

500+
WATER/WASTEWATER
PROJECTS
COMPLETED

Relevant Project Experience

ECM Sanford Creek Lift Station – East Central Missouri Water & Sewer Authority

Cochran designed a new lift station which serves the entire East Central Missouri Water & Sewer Authority. The lift station was constructed to redirect sewage from the City of St. Charles to St. Peters for treatment. The lift station design included two 890 gpm 60 horsepower pumps, 13,500 feet of 10" force main, underground concrete emergency storage basin, permitting with the Lakeside 370 Levee District, and permitting with MoDOT to cross Hwy 370. The project had a list of challenges which included a creek crossing, aerial crossing over railroad tracks, levee crossing and maintaining a maximum allowable flow to the existing St. Peter's lift station. To accomplish the flow rate requirements VFD's were used to control the pump rate and emergency underground storage sized to hold excess flow. The lift station was placed in service in 2016. **Each team member listed in our resumes section assisted in the completion of this project.**



Westridge Subdivision & Penn Street Water Main Extension – PWSD No. 3 of Franklin County

Cochran completed a two-phase water main extension for PWSD No. 3 of Franklin County. The first phase of the project, Penn Street Water Main, consisted of installation of approximately 1,100 lineal feet of 4-inch PVC water main, 2 fire hydrants, and water service transfers. Construction was completed in September 2017. The second phase of the project, Westridge Subdivision, began in November 2017. The project included installation of 5,600 lineal feet of 6-inch PVC water main, 12 fire hydrants, and water service transfers. The project was completed to replace a failing water distribution system within an older subdivision. The existing transite pipe distribution system required regular leak repairs. The project required new service lines and new service meters. The project cost totaled \$536,000. Over 50 customers were impacted by the project requiring extensive communication to maintain good customer relations. Construction of Phase 2 was complete in May 2018. Cochran completed all project aspects including topographic survey, easement documents, preliminary and final design, bid administration and construction services. **Project Team: Christopher Boone and David Van Leer**

Lake Serene Water Main Replacement – PWSD. No. 3 of Franklin County

Cochran was selected by PWSD No. 3 of Franklin County to provide Surveying, Design, Bid Administration, Construction Administration and Construction Inspection for the replacement of the Lake Serene Water Distribution System. The project consists of approximately 3,031 lineal feet of 8-inch PVC Water Main, 7,544 lineal feet of 6-inch PVC water main, and 5,767 lineal feet of 4-inch PVC water main, 25 hydrants, and water service transfers. The project required new water main installation through an existing lake development with limited space for construction. Cochran worked closely with District Staff and the Lake Serene customers to ensure a successful project with no interruptions. Total project cost is \$1.1million. Construction is anticipated to be complete in June 2019. **Project Team: Christopher Boone and David Van Leer**

Campbell City Gravity Sewer Extension – City of Ozark

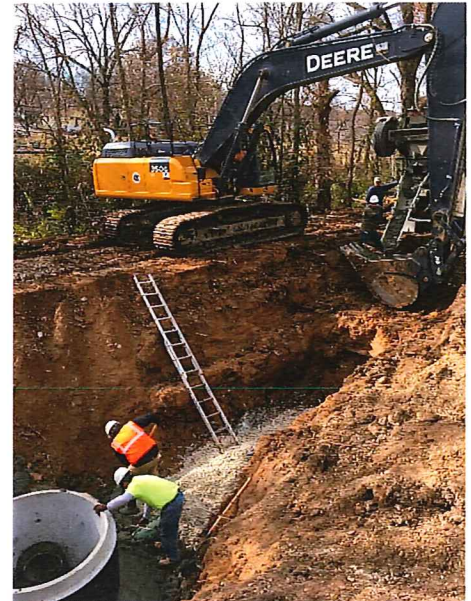
Cochran designed 1,800 lineal feet of 8-inch gravity sewer for the City of Ozark. The project provided public sewer to an un-serviced region of the City and allowed multiple private sewage

City of Branson – RFP No. 2493-25

holding tanks and septs to be eliminated. In addition to the environmental benefits of the project, the extension provides public sewer to undeveloped property which previously had no sewer available. Cochran provided all aspects of design including surveying, easement documents, design, permitting, bid administration, construction administration and inspection. Construction of the project was completed in 2018. **Project Team: Christopher Boone, Mark Blair, and David Van Leer.**

Sanitary Sewer Improvements – City of Union

Cochran was selected by the City of Union for Sanitary Sewer Collection professional services. The initial phase of the project consisted of preliminary design and preparation of cost estimates. The City used this information for construction of three sewer projects. Total estimated cost of the three gravity sewer projects is \$300,000. The Christina Avenue project was completed in January of 2019 under budget. Final design of the Woodlands Oaks gravity sewer is currently being completed. This project will eliminate a high maintenance lift station by constructing a new gravity sewer main within the existing subdivision. Construction of the Woodland Oaks sewer is anticipated to begin in late 2019. We anticipate the final sewer project to be completed in 2020. Cochran provided all services including surveying, easement document preparation, preliminary and final design, geotechnical investigation, and construction services. **Project Team: Christopher Boone, Brian Gentges, and David Van Leer.**



Resumes

Christopher N. Boone, P.E. - President

Mr. Boone became President of Cochran in 1998 and assists with the management of the civil, commercial, municipal and the water management groups. His broad project experience, which spans over 29 years, includes **hundreds of municipal water/wastewater projects**. As president he is responsible for the day to day business operations and provides executive oversight including project design, schedule, budget and quality control. Chris's goal for each project is to strive for innovative design excellence, to exceed the client's expectation through strong collaboration and the on-time project completions. Mr. Boone is a 1990 graduate of Missouri S&T formerly University of Missouri Rolla with a Bachelor's of Science in Civil Engineering. He is a registered licensed professional engineer in MO, IL, IN, OH, and TN. Chris will provide executive oversight including review of the project scope, all design stages, schedule and budgets for the City of Branson projects. Mr. Boone will meet weekly with the Project Manager for regular project updates and to ensure your project is progressing as promised within schedule/budget and all project challenges are addressed timely.

Dave Van Leer, P.E. – Senior Project Manager

Mr. Van Leer is a Senior Project Manager with Cochran and will be a key point of contact for the City of Branson. He brings **12 years of experience in Water/Wastewater Engineering**. Dave's responsibilities consist of design and supervision of civil engineering projects including water system improvements/extensions, sanitary sewer system improvements/extensions, stormwater systems, conceptual layouts, and large complex site designs. Dave has been instrumental in the design and management of numerous water and wastewater projects within nearby areas such as the City of Ozark, Greene County and across multiple states. Dave is noted for delivering a high-quality project on time and on budget. Mr. Van Leer will be responsible for developing the

final scope of work, design, budget, schedule, and quality assurance procedures. In addition, he will manage the survey, design, geotechnical investigation, and construction services for the project. This will include coordinating weekly progress meetings with Cochran's project team. He is a 2007 graduate of Missouri S&T formerly University of Missouri Rolla with a Bachelor's of Science in Civil Engineering. Mr. Van Leer is a registered professional engineer in the state of MO.

Mark Blair, MBA, P.E. - Senior Design Engineer

Mr. Blair is Cochran's Ozark/Southwest Regional Director. As the Senior Designer for these projects, Mark will be the local point of contact and will be available for immediate project needs. As Senior Design Engineer he will be responsible for design drawings and construction cost estimates. He is a registered professional civil engineer in MO and brings 15 years of experience in multiple civil engineering disciplines including **Municipal Engineering**. He has been a part of the Cochran team since 2012 and is skilled with design & construction practices for municipal projects. Mark is a 2006 graduation from the University of Missouri Columbia with an MBA and a Bachelors in Civil and Environmental Engineering. Mr. Blair is dedicated to providing quality, practical and economical solutions on all projects while remaining on time and on budget.

Brian Gentges - Senior Designer

Mr. Gentges joined the Cochran team in 2005 and brings over 31 years of experience. Brian will be responsible for all mechanical, electrical, plumbing, structural, and the SCADA system designs. Mr. Gentges' skills will be of significant value for all projects listed but specifically for the Lift Station 17 upgrades. As a licensed Architect in the state of MO, Brian offers the unique ability of architecture, MEP, and civil engineering design to our water resources projects. He has worked on numerous water and **municipal facilities**, including design build, and is familiar with all facets of design and construction details. Brian is a 1988 graduate from Linn Technical College with an Associate's Degree in Architecture. With an easy-going personality and his great attention to detail, Brian is a client favorite to work with. Mr. Gentges is a licensed Architect in the State of Missouri.

Project Schedule

Client Interaction and Progress Reports/Meetings

The Cochran team is dedicated to providing an interactive approach while providing high-quality projects for a reasonable price while meeting the time frame requested. With that in mind, we have assembled our best technical team members not only for their experience, but their ability to commit, communicate, and deliver quality projects on-time and within scope of work.

We believe communication will be key to your projects. And with the first call from the City of Branson, Project Manager Dave Van Leer will be immediately ready to respond, setting a kick-off meeting for the projects. At that time Mr. Van Leer will work the City to establish a clear line of key contacts, communication expectation, and detailed project scopes including design, schedule, budget and quality assurance procedures.

Our interactive approach will include ongoing communication at all points of the projects including weekly updates and monthly reports detailing the status of the projects and addressing any changes or challenges. In addition, each project will have an intense quality review at 30% plans, 70% plans, and final bid documents, as well as continuous communication and project status reports throughout the course of the project.

Our process:

Phase 1 – Preliminary Design

Cochran designs numerous sewer and water systems throughout the state of Missouri each year. The design will comply with all Missouri Department of Natural Resources and the City of Branson guidelines and criteria. Interaction between Cochran and City Staff will be a key component to preparing a successful Preliminary Design. Prior to the start of a project, Cochran will hold a Kick-Off Meeting with City Staff to discuss pertinent project information. In addition, Cochran will coordinate bi-weekly meetings with the City either by phone or in person and will send monthly status reports to ensure the project is progressing as expected.

Phase 2 – Final Design

Cochran will prepare all bid documents implementing the recommendations from the approved Preliminary Design. All documents will be prepared in a clear and concise manner to avoid confusion during the bidding and construction process. Cochran expects “tight” bid results on every project which indicates bidders have a clear understanding of the project. Consideration and discussions with City Staff will be had to determine the best way to structure the bid package. Breaking this project into multiple bid packages may reduce contractor markup on the various scopes of work yielding the best pricing for the City.

Phase 3 – Construction Services

Construction support services begin once the design is complete and a contractor has been selected. Proper implementation of the design through the construction process is critical to maintaining the project budget and schedule as well as ensuring a high-quality finished product for the City of Branson. The proximity of the projects to existing residences will require constant communication with the property owners to ensure a successful project.

We are ready to start all projects immediately and complete the work in the timeframes needed by the City of Branson.

Past Projects on Schedule

Client	Project	Design Time	
		Estimate	Actual
East Central Missouri Water & Sewer Authority	Sanford Creek Lift Station	14 months	12 months
PWSD No. 3 of Franklin County	Westridge Subdivision Water Main Extension	3 months	2 months
PWSD No. 3 of Franklin County	Lake Serene Water Main Improvements	4 months	4 months
City of Ozark	Campbell City Gravity Sewer Extension	2 months	1 month
City of Union	Sanitary Sewer Improvements	2 months	2 months

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Past Projects on Budget

Client	Project	Cost	
		Estimate	Actual
East Central Missouri Water & Sewer Authority	Sanford Creek Lift Station	\$2,500,000.00	\$2,527,000.00*
PWSD No. 3 of Franklin County	Westridge Subdivision Water Main Extension	\$598,820.00	\$451,015.70
PWSD No. 3 of Franklin County	Lake Serene Water Main Improvements	\$1,404,100.00	\$1,093,427.50
City of Ozark	Campbell City Gravity Sewer Extension	\$168,816.00	\$124,649.84
City of Union	Sanitary Sewer Improvements	\$95,007.00	\$83,983.77

* Due to unforeseen challenges, extensive scope changes after the budget was established lead to increased construction cost. Cochran performed Value Engineering to keep the project within 3% of the established budget.

Quality Assurance and Quality Control

Not any one approach fits every client. Consults should be in active partnership with the client to help identify needs, discover alternatives, perform services within designated or needed timeframe, and think ahead about how our engineering solutions effect other decisions that must be made (i.e. keep within budget/schedule). Of significant note - our approach is not only to simply design the lowest construction cost solution, but also to take into account the future maintenance costs.

Quality control is maintained at Cochran by following a systematic approach to project management, outlined as follows:

- Detailed and itemized project proposals to ensure a there is a complete understanding of scope
- Specialized accounting/project management software with real time reporting to ensure schedule and billing
- Licensed project manager supported by licensed design engineers
- Weekly project review with department heads and principals
- Project status reports to the client at regular intervals
- Project review with the client at key milestones (preliminary design, 30%, 70%)
- Pre-bid meetings, pre-construction meetings, and periodic construction inspections

At Cochran, one of our core values is to **provide an “extra mile” level of service, always giving the client more than they expect.** This means that we treat every one of our clients like we would treat a best friend – someone you’d go the extra distance for. This mindset naturally helps accomplish quality design, meeting schedules and deadlines, keeping projects within budget, and exceeding the Client’s expectations for communication and collaboration.

Project Approach**Lift Station 17 Force Main****Project Understanding**

The existing force main running from Lift Station 17 to the east end of Dakota Road has experienced multiple line breaks. The line breaks lead to wastewater spills and system shutdowns. Substandard pipe bedding and rocky backfill are believed to be the cause of the pipe failures. The City wishes to run a new force main from Lift Station 17 constructed of a more durable pipe material. The City has identified a potential alignment and would like to evaluate increasing the main diameter to improve hydraulics. Lift Station 17 is a duplex lift station, however

due to system constraints the two pumps cannot operate simultaneously. The City wishes to improve the system to allow both pumps to run together allowing for higher pumping rates.

Project Approach

Phase 1 – Preliminary Design (Lift Station 17 Force Main)

We anticipate the Preliminary Design will include the following items:

- ▶ **Lift Station 17 Analysis**
 - Evaluation of Lift Station 17 to include:
 - Hydraulic Analysis of existing pumps with existing and new force main.
 - Pump modifications will be recommended as needed.
 - Electrical and Control System
 - Emergency Storage
 - Hydrogen Sulfide related issues such as odor and corrosion
 - Energy Efficiency Analysis of pumps
- ▶ **Sizing and Alignment Selection of New Force Main**
 - City of Branson's 2-foot contours will be utilized to establish the existing elevations of the project area.
 - In-depth hydraulic modeling of the existing and proposed system improvements will be performed to aid in force main sizing.
 - Force main alignment will be selected to minimize construction costs and to allow for improved maintenance access.
 - Consideration will be given to various pipe materials including ductile iron, C900 PVC, and other durable pipe types. Material cost will be considered in the pipe selection.
 - Cost factors such as easement acquisition, terrain, existing utilities and solid rock excavation will be considered in the force main alignment selection.
 - We will recommend drilling the proposed alignment to determine solid rock depth. This will allow for complete evaluation of the alignment and cost certainty with regards to solid rock excavation.
 - Inflow and Infiltration from the Fall Creek Resort will be evaluated and recommendations presented.
 - Hydraulic analysis of receiving sewer will be completed as needed.
- ▶ **Provide accurate cost estimates for the recommended improvements to aid the City in budgeting and financing of the project**
 - We will use our experience in sanitary sewer infrastructure to provide the most accurate preliminary cost estimates possible. The specific expertise of manufacturers and technical sales representatives will be used as needed for equipment pricing.
 - Cochran takes pride in provided preliminary cost estimates at the Preliminary Design stage that align closely with final construction costs.

Phase 2 – Final Design (Lift Station 17 Force Main)

Bid documents will include the following:

- ▶ **Force Main Plan and Profiles**
 - Plan and Profile Sheets will be prepared for all new mains indicating all material and project requirements. Detailed field surveys will be used to create the design. Profiles will indicate rock depth and all utility crossings along with new appurtenances such as cleanouts and air/vacuum release valves.
 - Details will be prepared indicating all fittings and fitting types. All fitting types will be coordinated with the City and indicated accordingly on the plans. This will ensure the City receives a complete project, meeting or exceeding City standards.

- Cochran's in-house surveyors will prepare all needed documents for temporary construction and permanent easements.
- Technical specifications for all improvements will be provided.
- ▶ **Lift Station Modifications**
 - Operations and maintenance will be among the top considerations for any modifications made to the existing lift station. Extensive coordination will occur between Cochran and City Staff during the design process. We will request meetings with operators to tour existing facilities to discuss "likes" and "dislikes" of existing systems and facilities.
 - Highly detailed plans are needed when modifying existing facilities to ensure modifications are compatible with existing systems. Highly detailed plans will minimize the potential for construction change orders.
 - Energy Efficiency will also be a top priority. Design considerations will include use of variable frequency drives and optimizing motor sizes.
 - Hydraulic Analysis will be performed inhouse by Cochran's staff. Readily available pumps will be utilized to ensure replacement pumps and parts can be procured in a short time period.
 - Technical specifications for all lift station modifications will be provided.
- ▶ **Phasing Plans**
 - Our understanding is keeping Lift Station 17 in service at all times will be critical. Cochran will prepare phasing plans ensuring constructability of the work and proper system operations for the duration of construction. Detailed phasing plans will minimize change orders.

Spring Creek Neighborhood Sanitary Sewer Collection

Project Understanding

The existing Spring Creek Neighborhood Sewer System is comprised of 4-inch diameter collection lines. The Spring Creek Collection System connects to the Branson System along Spring Creek Road south of Hickory Drive.

The existing Spring Creek Collection System does not meet Missouri Department of Natural Resources or City of Branson standards. The City intends to replace and bring the entire collection system up to standards.

Project Approach

Phase 1 – Preliminary Design (Spring Creek Neighborhood Sanitary Sewer Collection)

We anticipate the Preliminary Design will include the following items:

- ▶ **Layout of New Sewer Collection System**
 - City of Branson's 2-foot contours will be utilized to establish the existing elevations of the Spring Creek Neighborhood area and layout the gravity collection system.
 - Sewer main alignment will be selected to minimize construction costs.
 - Cost factors such as easement acquisition, terrain, and solid rock excavation will be considered in the alignment selection.
 - We will recommend drilling the proposed alignment to determine solid rock depth. This will allow for complete evaluation of the alignment and cost certainty with regards to solid rock excavation.
- ▶ **Provide accurate cost estimates for the recommended improvements to aid the City in budgeting and financing of the project**
 - We will use our experience in sanitary sewer systems to provide the most accurate preliminary cost estimates possible.
- ▶ **Public Notification**

- Our experience shows notifying residents of these types of projects early on improves relations with the City. Cochran can aid in the preparation of informative letters and conduct informative meetings for the public.

Phase 2 – Final Design (Spring Creek Neighborhood Sanitary Sewer Collection)

Bid documents will include the following:

- ▶ Sewer Collection System Plan and Profiles
 - Plan and Profile Sheets will be prepared for the entire collection system indicating all material and project requirements. Detailed field surveys will be used to create the design. Profiles will indicate rock depth and all utility crossings.
 - A detailed review of existing utilities will be critical in avoiding conflicts and change orders. Cochran will request mapping and work with the utility companies to determine the location of all utilities.
 - Details will be prepared indicating all system appurtenances, fittings and fitting types. All appurtenances and fitting types will be coordinated with the City and indicated accordingly on the plans. This will ensure the City receives a complete project, meeting or exceeding City standards.
 - System layout will be configured to minimize stormwater inflow potential. Manhole locations will be reviewed to ensure surface water will not enter the collection system.
 - Cochran's in-house surveyors will prepare all needed documents for temporary construction and permanent easements.
 - Technical specifications for all collection improvements will be provided.

Spring Creek Neighborhood Water Distribution

Project Understanding

Spring Creek Neighborhood was originally established as a private water system with small diameter distribution mains. Spring Creek Neighborhood is currently served from the Branson distribution system through a master meter. The Spring Creek Water Distribution System presents the following issues for the City:

- The small diameter mains create hydraulic restrictions preventing adequate fire protection.
- The distribution system cannot provide reliable domestic water service.
- The City has no means to recuperate lost revenue from water loss.

The City of Branson wishes to replace the Spring Creek Distribution System to meet current City standards, provide reliable domestic and fire flow, provide water service to unserved areas, and improve system looping. New water meters and service lines will be installed as part of the project. Change in elevation within Spring Creek Neighborhood will require establishing pressure zones with pressure reducing valves.

Project Approach

Phase 1 – Preliminary Design (Spring Creek Neighborhood Water Distribution)

We anticipate the Preliminary Design will include the following items:

- ▶ Identification of the new pressure zone boundaries
 - City of Branson's 2-foot contours will be utilized to establish the existing elevations of the service area.
 - Calculation will be performed to correlate ground elevation and water pressure based on the system hydraulic grade line. Generally, pressure zones are established to provide operating pressures between 40 psi and 100 psi. The desired pressure range will be confirmed with the City.
- ▶ Sizing and Alignment Selection of New Water Main

- In-depth hydraulic modeling of the proposed system improvements will be performed to aid in main sizing.
- Water main alignment will be selected to minimize construction costs.
- Cost factors such as easement acquisition, terrain, and solid rock excavation will be considered in the water main alignment selection.
- We will recommend drilling the proposed alignment to determine solid rock depth. This will allow for complete evaluation of the alignment and cost certainty with regards to solid rock excavation.
- ▶ Provide accurate cost estimates for the recommended improvements to aid the City in budgeting and financing of the project.
 - We will use our experience with similar type of work to provide the most accurate preliminary cost estimates possible.

Phase 2 – Final Design (Spring Creek Neighborhood Water Distribution)

Bid documents will include the following:

- ▶ Water Main Plan and Profiles
 - Plan and Profile Sheets will be prepared for all new mains indicating all material and project requirements. Detailed field surveys will be used to create the design. Profiles will indicate rock depth and all utility crossings.
 - Details will be prepared indicating all fittings and fitting types. All fitting types will be coordinated with the City and indicated accordingly on the plans. This will ensure the City receives a complete project, meeting or exceeding City standards.
 - Isolation Valve and Fire Hydrant locations will be coordinated with City Staff.
 - Cochran's in-house surveyors will prepare all needed documents for temporary construction and permanent easements.
 - Technical specifications for all distribution improvements will be provided.

Phase 3 – Construction Services

The construction services described below will be utilized on all three projects.

Construction support services will include:

- ▶ Periodic Site Construction Observations
 - Cochran's Project Manager and Inspection Managers will make site visits as requested by the City and at critical phases of construction. Inspections will confirm compliance with the Construction Drawings and Technical Specifications.
 - Cochran will make site visits when unforeseen conditions are encountered. Cochran's objective is to account for all project conditions in the bid documents. However, when unforeseeable conditions arise, quick, cost effective field changes will be Cochran's top priority to maintain project schedule, budget and quality.
 - Cochran prides itself on minimizing change orders during the construction process.
- ▶ Shop Drawing and Submittal Review
 - Cochran will review all shop drawings and submittals to ensure compliance with the Bid Documents. Quick, but thorough review will keep the project moving forward.
- ▶ Preparation of Record Drawings
 - Cochran will work with the contractor and City to maintain record (as-built) drawings of the project. Accurate as-built drawings are invaluable during future maintenance or future projects.
- ▶ Final Site Inspection and Punchlists

- Cochran will accompany the City on final walk-throughs and prepare punchlists identifying all deficient items not complying with the Construction Drawings or Technical Specifications.
- ▶ **Operation and Maintenance Manuals**
 - As the project progresses, Cochran will compile and organize all relevant manuals, documents, and drawings for submission to the City at project closeout. Manuals can be provided as bound hard copies, digital format, or both.
- ▶ **Lift Station Start-Up (If Needed)**
 - If modifications made to Lift Station 17 warrant a start-up, Cochran will assist with lift station startup to ensure proper operation of the station and that all warranty documents are in place.
 - The contractor will be required to demonstrate the lift station is operating as designed.

Detailed Value Engineering Procedures

Cochran believes virtually all projects have opportunities for improved value, and the Value Engineering (VE) process has the objective of identifying those opportunities. Cochran's VE process will be performed at preliminary design phase, mid-design review, and at final design phase. The basic phases of Cochran's VE study will include:

- Gather information about the project
- Identify basic project functions and goals
- Formulate project alternatives
- Evaluate project alternatives
- Develop best alternatives
- Present recommendations
- Incorporate suggestions into the project.

VE studies identify project issues and provide opportunities to optimize the design in progress while validating project scope, budget, and costs.

Value Engineering for the City of Branson Projects

1. Hydraulic Modeling of Lift Station 17 Pumps and Force Main to optimize main diameters and pump horsepower.
2. Cost factors such as easement acquisition, terrain, and solid rock will be considered when evaluating construction cost of the force main, gravity sewers, and water mains.
3. Energy efficiency for Lift Station 17. Consideration will be given to using Variable Frequency Drives to control the pumps as well as optimizing motor sizes.
4. Depth of gravity sanitary sewers has a significant impact on cost. This cost factor is escalated when solid rock excavation is required. Cochran will minimize the bury depth of all sewers while ensuring service to all properties. We will recommend drilling the proposed alignment to determine solid rock depth. This will allow for complete evaluation of the alignment and cost certainty with regards to solid rock excavation.
5. Pipe material for the Lift Station 17 force main will be evaluated based on cost and life expectancy. Evaluation will be performed on ductile iron, C900 PVC, and any other material requested by the City. Full encapsulation of the new main with granular backfill should also be evaluated to minimize potential for cobbles and boulders in trench backfill.

Life-Cycle Cost Analysis

Cochran will also explore the life-cycle cost, or total project cost over the useable life of a facility, and how it equates to the initial capital cost plus future operation and maintenance costs.

VE studies during the early stages of design prior to issuance of the bid documents will help identify certain equipment or systems that require future cost to maintain.

The VE process is pertinent to the evaluation of any project type by any owner (public or private) and the earlier a VE study is performed, the greater the potential benefits.

Reference Check/Recommendations

We are committed to providing incomparable resources, working as part of a team; and supplying the best in service, knowledge, and dedication.

We welcome you to call any or all of our references as we are only as good as their last reference. Please call them!

City of Ozark

Jeremy Parsons, Community Development Director, 417.581.2407

Similar Project: Campbell City Gravity Sewer

PWSD No. 1 of Greene County

Doug Anderson, Manager, 417.881.1762

Similar Project: Highway FF Water Main Extension (Green Ridge Estates)

City of Union

Jonathan Zimmermann, City Engineer, 636.583.3600

Similar Project: Multiple Sanitary Sewer and Water Distribution Projects

City of De Soto

Kevin Warden, Public Works Director, 636.586.3326

Similar Project: Fountain City Sanitary Sewer
Clarke Street Water Main

PWSD No. 3 of Franklin County

Bob Hathcock, General Manager, 636.742.5200

Similar Project: Westridge Subdivision Water Main Improvements
Lake Serene Subdivision Water Main Improvements
Multiple Sanitary Sewer Collection Projects

***Please note we did not list a reference for the ECM Sanford Lift Station. At the time of the project the District was managed by Alliance Water Resources. Alliance is no longer a representative of the District. At your request we can supply an Alliance contact, or a new representative of the PWSD No. 2 of St. Charles County not involved with the project.**